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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/509,107 | 09/27/2004 | Piero Baglioni | P-7235-US | 1297 |

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| EXAMINER | |
|---|---|
| VANOY, TIMOTHY C | |
| ART UNIT | PAPER NUMBER |
| 1754 | |

| SHORTENED STATUTORY PERIOD OF RESPONSE | MAIL DATE | DELIVERY MODE |
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| 3 MONTHS | 04/04/2007 | PAPER |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/509,107 | BAGLIONI ET AL. | |
| | Examiner | Art Unit | |
| | Timothy C. Vanoy | 1754 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. §.133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *21 March 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-16 and 21-27* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *8 and 9* is/are allowed.

6)☒ Claim(s) *1-7,10-16 and 21-27* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-5, 21 and 22 are rejected under 35 U.S.C. 102(b) as being anticipated by pgs. 40 and 41 in "Zirconium and its Compounds" by Francis P. Venable.

The middle of pg. 40 from Venable discloses that zirconium hydroxide can be made by using an alkali hydroxide to precipitate it from a solution of zirconyl salt.

The first full paragraph from Venable discloses that when the (zirconium) hydroxide has been partially dehydrated at a somewhat lower temperature according to the reaction: $ZrO(OH)_2 = ZrO_2 + H_2O$. (Thereby clearly teaching that the calcination of zirconium hydroxide yields the metal oxide).

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

The person having ordinary skill in the art has the capability of understanding the scientific and engineering principles applicable to the claimed invention. The references of record in this application reasonably reflect this level of skill.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-7, 10, 11, 21 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over pgs. 40 and 41 in "Zirconium and its Compounds" by Francis P. Venable.

The middle of pg. 40 from Venable discloses that zirconium hydroxide can be made by using an alkali hydroxide to precipitate it from a solution of zirconyl salt.

The first full paragraph from Venable discloses that when the (zirconium) hydroxide has been partially dehydrated at a somewhat lower temperature according to the reaction: $ZrO(OH)_2 = ZrO_2 + H_2O$. (Thereby clearly teaching that the calcination of zirconium hydroxide yields the metal oxide).

The difference between the applicants' claims and this Venable reference is that applicants' claim 6, 7, 10 and 11 describe the reaction between the metal chloride and the alkaline hydroxide as occurring in a homogeneous phase and also describe the temperatures, however it is submitted that these differences would have been obvious to one of ordinary skill in the art at the time the invention was made because it is submitted that the same reaction between the same alkaline hydroxide and the same metal salts in the same reaction medium to produce the same metal hydroxide product will inherently occur in the same claimed phase at the same claimed temperatures.

Claims 12-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over U. S. Pat. 4,574,001 to Bielfeldt et al. in view of U. S. Pat. 6,162,530 to Xiao et al.

Col. 1 lns. 33-41 in Bielfeldt discloses that hydroxide dispersions can be made by using elements, such as zirconium, magnesium, zinc or titanium.

The difference between the applicants' claims and Bielfeldt is that applicants' claims 12 and 13 disclose that the hydroxides have a particle size ranging from 10 to 1,000 nm (or from 50 to 500 nm.), whereas Bielfeldt only discloses that the particle size of the sol is "very small" (please see col. 1 lns. 37-38).

Col. 1 lns. 39-44 in Xiao discloses that nanostructured materials possess substantially different, and in many cases improved, chemical and physical properties compared to their micron-sized grain counterparts of the same chemical composition.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the dispersion described in col. 1 lns. 33-41 in Bielfeldt by having the metal hydroxide particles to be of a size ranging from 10 to 1,000 nm., as set forth in applicants' claims 12 and 13, because col. 1 lns. 39-44 in Xiao discloses that nanostructured materials possess substantially different, and in many cases improved, chemical and physical properties compared to their micron-sized grain counterparts of the same chemical composition.

Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over U. S. Pat. 4,574,001 to Bielfeldt et al. in view of U. S. Pat. 6,162,530 to Xiao et al. and further in view of U. S. Pat. 2,734,835 to Florio et al.

Col. 1 lns. 33-41 in Bielfeldt discloses that hydroxide dispersions can be made by using elements, such as zirconium, magnesium, zinc or titanium.

The difference between the applicants' claims and Bielfeldt is that applicants' claim 16 disclose that the hydroxides have a particle size ranging from 10 to 1,000 nm (or from 50 to 500 nm.), whereas Bielfeldt only discloses that the particle size of the sol is "very small" (please see col. 1 lns. 37-38).

Col. 1 lns. 39-44 in Xiao discloses that nanostructured materials possess substantially different, and in many cases improved, chemical and physical properties compared to their micron-sized grain counterparts of the same chemical composition.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the dispersion described in col. 1 lns. 33-41 in Bielfeldt by having the metal hydroxide particles to be of a size ranging from 10 to 1,000 nm., as set forth in applicants' claim 16, because col. 1 lns. 39-44 in Xiao discloses that nanostructured materials possess substantially different, and in many cases improved, chemical and physical properties compared to their micron-sized grain counterparts of the same chemical composition.

The difference between the applicants' claim 16 and the Bielfeldt patent is that applicants' claim 16 sets forth that the dispersion is used to coat textile products, paper products, etc.

The Florio patent in col. 1 lns. 15-20 discloses the use of metal dispersions (please also see Example 1) to treat fabrics, paper products, etc.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use of the dispersions of the Bielfeldt patent to treat fabrics, paper products, etc., in the manner set forth in applicants' claim 16, because col. 1 lines 15-20 and Example 1 in the Florio et al. patent fairly suggests the use of such dispersions for the treatment of fabrics, paper products, etc.

Claims 23-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over U. S. Pat. 2,734,835 to Florio et al. in view of U. S. Pat. 6,162,530 to Xiao et al.

Col. 1 lns. 15-20 in Florio et al. disclose the use of metal oxide dispersions for treating fabrics, paper products, etc. (please also see Example 1), wherein the dispersions use water (please see col. 4 lns. 16-18) and may also use oxides of metals such as titanium, zirconium, magnesium, etc. (please see col. 4 lns. 59-69).

The difference between the applicants' claims and this Florio et al. patent is that applicants' claims 23 and 24 set forth that metal oxides may have particle sizes ranging from 10 to 1,000 nm. (or from 50 to 500 nm.).

Col. 1 lns. 39-44 in Xiao discloses that nanostructured materials possess substantially different, and in many cases improved, chemical and physical properties compared to their micron-sized grain counterparts of the same chemical composition.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the dispersion described in the Florio patent by having the metal oxide particles to be of a size ranging from 10 to 1,000 nm., as set forth in applicants' claim 23 and 24, because col. 1 lns. 39-44 in Xiao discloses that nanostructured materials possess substantially different, and in many cases improved, chemical and physical properties compared to their micron-sized grain counterparts of the same chemical composition.

***Response to Arguments***

Applicants' arguments submitted with their Amendment filed on Mar. 21, 2007 with respect to the pending claims have been considered but are moot in view of the new ground(s) of rejection.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Timothy C. Vanoy whose telephone number is 571-272-8158. The examiner can normally be reached on Mon-Fri 8-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley Silverman, can be reached on 571-272-1358. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Timothy C Vanoy
Primary Examiner
Art Unit 1754

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